

CLAIMS OF INVENTION

What is claimed is:

1. A bullet guidance system for guiding an in-flight bullet along an optimum trajectory along which said bullet would impact a laser-identified target, said system comprising:

laser beam detecting means contained within said bullet and being capable of receiving laser beam energy reflected from said target and converting said energy to electrical impulses;

logic circuit means contained within said bullet having means therein responsive to receipt of said impulses for determining the deviation of said bullet from said optimum trajectory and for generating corrective signals in response to said impulses;

steering control means having means therein responsive to said corrective signals in a manner to actuate said steering control means so as to deflect air flow about said bullet thereby translating the same to said optimum trajectory; and

power supply means contained within said bullet being interconnectible to said logic circuit and said steering control means to provide sufficient electrical power to produce the functions required by said system.

2. The bullet guidance system of Claim 1 wherein said detecting means includes a plurality of laser sensors being symmetrically disposed about a longitudinal axis of said bullet, said sensors being located in a plane perpendicular to the axis and being arranged to receive said laser beam energy in an opposite direction to the direction in which said bullet is moving.

3. The bullet guidance system of Claim 1 wherein said logic circuit means includes amplification means being integrated thereto for amplifying said impulses received from said detecting means.

4. The bullet guidance system of Claim 1 wherein said logic circuit means ^{includes} ~~including~~ said amplification means ^{and} is contained in a semiconductor chip within said bullet.

5. The bullet guidance system of Claim 4 wherein said semiconductor chip is installed on a flat plate means on a forward side thereof, said plate means being located in a plane perpendicular to said axis of said bullet.

6. The bullet guidance system of Claim 1 wherein said steering control means includes at least one deployable flap means which is extensible from said bullet to deflect air flow about said bullet to impart a correctional momentum to translate said bullet to said optimum trajectory.

7. The bullet guidance system of Claim 6 wherein said deployable flap means are at least partially fabricated from piezo electric materials enabling said flap means to be expanded when subjected to said corrective signals.

8. The bullet guidance system of Claim 1 wherein said power supply means is a miniature battery contained within said bullet.

9. The bullet guidance system of Claim 8 wherein said battery is a lithium-polymer battery.

10. The bullet guidance system of Claim 1 wherein said bullet is fired from a precision, smooth-bored weapon thereby not imparting axial spin to said bullet in the manner of a conventional rifle.

11. The bullet guidance system of Claim 10 wherein said bullet is propelled by a conventional powder cartridge.

12. The bullet guidance system of Claim 11 wherein said cartridge is a standard 0.50 caliber M-2 cartridge.

13. A method of guiding an in-flight bullet along an optimum trajectory to a laser-identified target, said bullet including a self-contained guidance system including laser detection means capable of receiving laser beam energy and

converting said energy to electrical impulses, logic circuit means responsive to receipt of said impulses for determining the deviation of said bullet from said optimum trajectory and for generating corrective signals in response to said electrical impulses for actuating steering control means in a manner to deflect air flow about said bullet thereby effecting a corrective momentum to translate said bullet to said optimum trajectory, said method comprising the steps of:

firing said bullet from a weapon at said target;

detecting laser beam energy reflected from said target using laser sensors;

converting said energy to electrical impulses;

determining the deviation of said bullet from said trajectory by analysis of said electrical impulses;

generating corrective signals in response to said electrical impulses;

actuating said steering control means in response to said corrective signals in a manner to deflect air flow about said bullet to impart a correctional momentum to said bullet whereby said bullet is translated toward said optimum trajectory to impact said target.

¹³14. The method of Claim ¹¹13 wherein the step of detecting is carried out by a plurality of laser sensors symmetrically disposed about a longitudinal axis of said bullet.

¹³15. The method of Claim ¹¹13 wherein the step of converting is carried out by photo detector elements within said sensors.

¹⁴16. The method of Claim ¹¹13 wherein the step of determining is carried out by a semiconductor logic circuit.

¹⁵17. The method of Claim ¹¹13 wherein the step of determining is carried out by piezo electric materials integrally formed with said control means.

18. The method of Claim 13 wherein the step of firing is carried out by a precision sniper rifle having a smooth internal bore.

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19. The method of claim ¹¹~~13~~ wherein the step of firing further includes
propelling said bullet to said target by use of a conventional powder charge.